# Final Colorado
# State Assessed Capitalization Rates
# Tax Year 2005

## INTRODUCTION

The narrative describes the methods, sources and calculations for the 2005 Capitalization Rates used by the Division of Property Taxation (DPT). The DPT develops a capitalization rate (cap rate) for each utility industry group or sub-group using the band of investment method. The cap rate for each source of capital (common equity, preferred stock and debt) is weighted according to its proportion in the market capital structure and combined to derive a weighted average cost of capital (WACC) for each industry. An example of the cap rate calculation:

| Industry WACC<br>Band of Investment Formula |
|---|
| Equity Rate x Percent Equity<br>+ Deb Rate x Percent Debt<br>+ Preferred Rate x Percent Preferred<br>= Industry Cap Rate |

| Example | Capital Structure | | | |
|---|---|---|---|---|
| | Rate | | Percent | |
| Equity | 15% | X | 50% | 7.5% |
| Debt | 8% | X | 40% | 3.2% |
| Preferred | 12% | X | 10% | 1.2% |
| | | | Industry Cap Rate | 11.9% |

## INDUSTRY GROUPINGS

We used the *Value Line Investment Survey* (Value Line) grouping for all industries published between December 2004 and February 2005. Some companies in the Value Line industry group were not used because their activities are not representative of the Colorado utility companies. Four industry groups are further subdivided to reflect different markets.

- The airline industry is divided into national airlines, regional airlines, and cargo carriers.

- Electric companies are divided into electric utilities and independent power producer (IPP) facilities.

- The railroad industry is divided into major carriers and short-line carriers.

- The telephone industry is divided into:

    - Competitive Local Exchange Companies (CLEC)
    - Incumbent Local Exchange Companies (ILEC)
    - Long-distance telephone companies,
    - Mobile telephone companies.

The separation between CLEC telephones and ILEC telephones is based on the primary business activity of the company. The long-distance group includes the companies that are predominantly long-distance providers and providers of broadband and fiber optic cable. Many of the telephone companies in each grouping are engaged in several telecommunications business ventures. For example, Qwest Communications is an ILEC as well as a long-distance provider. Sprint is a long-distance carrier, a local exchange provider and a wireless provider.

## INDUSTRY CAPITAL STRUCTURE

An average capital structure is developed using the market value of equity and the book values of long-term debt and preferred stock. Using Value-Line, the market value of equity is calculated by multiplying the number of shares of common stock outstanding by the listed recent stock price. The average percentage of equity, debt, and preferred stock for all companies in the group is used to calculate the WACC.

Non-typical (outlier) capital structures were closely examined to ascertain whether the impact of outliers could skew the final weighted capitalization rate. Capitalization rates for all industry groups were established using the average debt and equity components from the study. Preferred stock was specifically excluded in the calculations of all industry types except the electric industry. The effects of any preferred stock on capital structure were added to the equity capital structure percentage. Refer to the section on the next page for additional information about our consideration of preferred stock.

Based on presentations at both the Wyoming and Colorado cap rate meetings and review of the issues surrounding "convergence" in the telecommunications industry, we have adjusted the capital structure for Competitive Local Exchange Companies (CLECs) and Incumbent Local Exchange Companies (ILECs) to 30% debt and 70% equity.

## CHANGES FOR 2005

### Preferred Stock

If the majority of companies in a particular industry did not have preferred stock, we placed zero weight as preferred stock in its capital structure. And, the industries average of preferred stock was included in the common equity rating for the industries capital structure. The industries that this applied to for 2005 are as follows:

Airlines – national, regional, and cargo.
Pipelines – distribution, transmission, and fluid.
Railroad – majors, shortline
Telecom – Clec, Ilec, Long-distance, mobile, and resellers

Preferred Stock remains only for the electric industry because it is typical for the electric industry.

Preferred stock will be looked at annually. If it becomes typical for companies in an industry, it will be given the appropriate weighting.

### IPP (formerly designated as Co-Generation Facilities and Wind Farms)

From 2005 forward, we reclassified gas cogeneration facilities, wind farms, and smaller non-rural electric, electric facilities as Independent Power Producers. These facilities are tied through purchase power agreements to major electrical power companies such as Xcel, Inc. Because of the close relationship these companies have with Xcel, we will apply the Electric Industry Capitalization rate when an income approach value is calculated.

For 2005, we are considering using a cost approach-based valuation method for single-cycle and combined-cycle electrical generation facilities. Additional details about the method will be provided to the affected companies when valuations are completed by the end of May.

### Resellers

In preparing the 2005 capitalization rate study for telecommunications companies, we were able to identify companies that are providing reseller telecommunication service in Colorado. We segregated these companies into a separate data subset and analyzed them to determine an appropriate capitalization rate applicable to telecommunications resellers in Colorado.

## COST OF EQUITY *Ke*

The DPT used both the Discounted Cash Flow (DCF) model and the Capital Asset Pricing Model (CAPM) to derive a cost of equity. DCF was not deemed appropriate for airline groups, IPPs, and telephone groups; only CAPM was used. For all others, both the DCF and the CAPM were used with equal weighting. The Risk Premium (RP) method to calculate the cost of equity was not utilized for the following reasons:

- The Risk Premium (RP) method relies primarily on long-term averages and the present conditions for utility companies in the study may not resemble those averages.

- The past averages mentioned above apply only as a trend for the whole market.

- The Risk Premium (RP) method is broadly general and applies to diversified companies in various industries. For capitalization rate calculation purposes, most estimates of common equity cost require a closer fit to the specific company in a regulatory, non-diversified utilities industry.

### Discounted Cash Flow (DCF)

The DCF is a measure of the equity rate. The return consists of two components, an expected growth rate and a dividend yield rate. The expected growth rate is the estimated future growth to earnings as presented in Value Line. The dividend yield is also shown in Value Line. The averages of the expected growth rate, the dividend yield, and the equity rate are shown on the AVERAGES line.

Electric and fluid pipeline industry representatives asked if we would eliminate any DCF equity rate indicators that fell below the ascribed debt rate for that company. As in the prior year, we eliminated the DCF equity rates that fell below 6.50 percent, and used the CAPM formula to derive the equity rate for these companies.

### Capital Asset Pricing Model (CAPM)

The CAPM is also a measure of the equity rate. The return consists of three components, the beta selection, the ex post (historical) and ex ante (forward looking) add-on for equity risk, and the risk free rate. The final CAPM rate is the average of the ex post and ex ante estimated cost of equity.

> **Beta Selection:** Beta is the variable in the CAPM that measures an asset's level of systematic risk. A stock with a beta of 1 is as risky as the overall market index, and thus will provide investors with an expected return equal

to that of the market index. Stocks with betas greater or less than 1.0 have risk levels and expected returns that are respectively higher or lower than that of the market index. The source used in this year's study is Value Line. The Value Line beta is derived from a regression analysis of the relationship between weekly percentage changes in the New York Stock Exchange Index over a period of five years. In case of short price histories, a smaller time period is used, but two years is the minimum.

**Risk Free Rate:** The risk free rate in the CAPM calculation is the rate for long-term (20-year) government bonds at December 31, 2004. The *Federal Reserve Statistical Release* of January 3, 2005, showed the rate at 4.85 percent.

**Ex Ante Cost of Equity:** In the context of the CAPM, the expected equity risk premium is an expected future return over the expected future risk free rate. Ideally, one should forecast both the risk free rate of return and the return on the market. In our analysis, the expected risk free rate of return required by investors is the long-term Treasury Bond Yield as of December 2004. The market rate of return is calculated on Page 5 at 13.92 percent. The result is an equity risk premium of 9.07 percent (13.92 percent - 4.85 percent).

The formula for the ex-ante CAPM is:

*Ke* = [beta x risk premium (9.07%)] + the risk free rate (4.85%)

**Ex Post Cost of Equity:** According to the *Risk Premium over Time Report: 2004,* Key Variables in Estimating the Cost of Capital, published by Ibbotson Associates (Risk Premium), the equity risk premium as of the end of 2004 was 7.2 percent. The risk premium is based on the difference between historical arithmetic mean total returns of large company stocks and long-term government bonds between 1926 and 2004.

The formula for the ex-post CAPM is:

*Ke* = [beta x risk premium (7.2%)] + the risk free rate (4.85%)

**Expected Future Rate of Return on the S & P 500:** The use of an ex-ante CAPM model requires an estimate of the expected future rate of return on the market portfolio. The average of the following two discounted cash flow calculations estimate the rate.

$$k_M = \frac{D_0(1+g)}{P_0} + g$$

$k_M$ = The expected future rate of return on the market portfolio (S & P 500)
$D_0$ = $19.44, current dividend, source: S & P Stock Guide, January 2005 Edition, P. 7.
$P_0$ = $1,133.97, current price, average of the S & P 500 monthly closing prices, source: S & P Current Statistics, January 2005 Edition.
$g$ = 11.975%, long-term projected earnings growth rate, source: S & P 500, December 31, 2004
$\frac{D_0}{P_0}$ = The dividend yield

$$k_M = \frac{\$19.44\ (1+.11975)}{\$1,133.97} + .11975$$

**$k_M$ = 13.895 %**

An alternative to using the current dividend and current price is to use the S & P 500 dividend yield of 1.7% (broad large cap), provided in the S & P Stock Guide, January 2005 Edition, P. 6. Substituting the dividend yield for the current dividend and current price the equation becomes:

**$k_M$ = (.017)(1.11975) + .11975 = 13.879%**

The equally weighted average of the two DCF models results in an expected required rate of return on the market of **13.887% or 13.89 (rounded).** The final estimated expected rate of return on the S & P 500 used in an ex ante CAPM model is:

| **Final Estimated Ex Ante CAPM** |
|---|
| **13.89 %** |

## COST OF DEBT

The cost of debt is obtained from *Mergent Bond Record* (Moody's) and *Standard and Poor's Bond Guide* (Standard and Poor's). The appropriate rates are incorporated for each company. If both Moody's and Standard and Poor's rating are available, the two are averaged. For those companies where no rate is available because of the wide range in risk rates between Standard and Poor's Bond Guide and Moody's, the average of both Moody's and Standard and Poor's Bond rating is used. If only one rate is available that rate is used for the company, then that rate plus the average of either Standard and Poors or Moody's is considered. For companies with a C or D rating the corresponding rating is imputed. The average debt rate for all companies in the grouping is incorporated into our WACC analysis for each industry.

Neither Standard and Poor's nor Mergent provides year-end 2004 Bond yields for bonds and notes rated BB to C level. Using both Standard and Poor's End of Year 2004 Bond Guide and the Mergent's January 2005 Bond Guide, we selected a significant number of a BB/Ba, B, CCC/Caa, CC/Ca, and C rated bonds. We stratified these bond instruments and calculated the median yield to maturity. These rates were used to establish the debt rate for companies having more speculative ratings.

## COST OF PREFERRED STOCK

The cost of preferred stock is obtained from Moody's. The appropriate rates are incorporated for each company. The average preferred stock rate is incorporated in the electric and distribution pipelines where it is deemed typical for the industry. For the companies where no rate is available, the average of the industry is imputed. For 2005, preferred stock average rate was calculated only for the electric industry category.

## CONCLUSION

All of the referenced rates are shown on the Summary Statistics on page 9 of the Capitalization Rate Study.

The factors for the WACC for each industry are shown on the CAP RATE CALCULATION line. The cap rate for the industry is based on the following formula:

| |
|---|
| Equity Rate x Percent Equity<br>+ Debt Rate x Percent Debt<br>+ Preferred Rate x Percent Preferred<br>= Industry Cap Rate |

Inclusion of flotation costs is not appropriate. Under the unitary method concept, we value the taxpayer property as a going concern; not as if the company would be placed on the market for sale each year. We do not assume every company will re-issue its stock every year.

## 2005 EQUALIZATION FACTOR

Review of the U.S. Bureau of Labor Statistics GNP Price Deflator Index, Consumer Price Index, Producer Price Index, and GNP Non-Residential Fixed Investment Index, the equalization factor for 2005 is calculated to be 99%. For the 2005 lien date, Colorado current values are multiplied by 99 percent to arrive at the Colorado actual value for the June 30, 2004, valuation date.

| | |
|---|---|
| Aggregate Indicators: | 99.05% |
| Investment Indicators: | 99.07% |
| **Reconciliation (rounded):** | **99%** |

Assessed value is 29 percent of the Colorado actual value.

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